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| APPLICATION NO.                    | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/801,823                         | 03/17/2004  | June-o Song          | 030681-635          | 2523             |
| 21839                              | 7590        | 06/16/2005           | EXAMINER            |                  |
| BURNS DOANE SWECKER & MATHIS L L P |             |                      | DICKEY, THOMAS L    |                  |
| POST OFFICE BOX 1404               |             |                      |                     |                  |
| ALEXANDRIA, VA 22313-1404          |             |                      | ART UNIT            | PAPER NUMBER     |
|                                    |             |                      | 2826                |                  |

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/801,823

Applicant(s)

SONG ET AL.

Examiner

Thomas L. Dickey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 April 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 and 12-16 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 2-5, 8 and 9 is/are allowed.  
6) ☒ Claim(s) 1, 6, 7, 10 and 12-16 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

  
**Minhloan Tran**  
**Primary Examiner**  
**Art Unit 2826**

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 17 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

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## DETAILED ACTION

1. The amendment filed on 04/27/2005 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 6,7, and 15 (claim 15 depending from claim 7) are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 6, lines 1-7, elements "a first electrode," "a p-type gallium nitride layer," and "a second electrode layer," are introduced twice, first by incorporation of claim 5 by reference, then literally.

In claim 7, line 2, " the third electrode layer" has no antecedent basis.

Correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 10, 12-14, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by HISANAGA ET AL. (JP 11040846 A).

With regard to claims 1 and 16, Hisanaga et al. discloses a thin film electrode for forming an ohmic contact in light emitting diodes or laser diodes, comprising a first electrode layer 13 including a Ni--X solid solution and laminated on a p-type gallium nitride layer 14 having a composition of  $Al_xIn_yGa_zN$  (where  $0 \leq x \leq 1$ ,  $0 \leq y \leq 1$ ,  $0 \leq z \leq 1$ , and  $x+y+z=1$ ); and a second electrode layer 12 laminated on the first electrode layer 13 and including Pt, which is at least one element selected from the group consisting of Au, Pt, Pd, Ni, Ru, Rh, Re, C, Cu and Ir. Note figure 1 and the Abstract (Item number 57, on the first page) of Hisanaga et al.1.

With regard to claims 10 and 12-14, Hisanaga et al. discloses a thin film electrode for forming an ohmic contact in light emitting diodes or laser diodes, comprising a first electrode layer 13 laminated on a p-type gallium nitride layer 14 and including a Ni--X solid solution; and a second electrode layer laminated on the first electrode layer 13 and including at least one element selected from the group consisting of Al, Ag and Rh, wherein the Ni-based (Ni--X) solid solution includes nickel (Ni) as a matrix metal, and X including 1 atomic percent to about 49 atomic percent of Mg, which is at least one element selected from the group consisting of group II elements including one element selected from the group consisting of Mg, Be, Ca and Zn, group VI elements including one element selected from the group consisting of S, Se and Te, and the group Sc, Y,

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Ge, Sn and Sb. Note figure 1 and the Abstract (Item number 57, on the first page) of Hisanaga et al.

***Response to Arguments***

5. Applicant's arguments with respect to claims 1,5,10,12-14, and 16 have been considered but are moot in view of the new ground(s) of rejection.

***Allowable Subject Matter***

6. Claims 2-4,5, 8, and 9 are allowed over the references of record because none of these references disclosed or can be combined to yield the claimed invention such as a thin film electrode comprising a p-type gallium nitride layer, a Ni--X solid solution first electrode layer laminated on the first gallium nitride layer, an Au, Pt, Pd, Ni, Ru, Rh, Re, C, Cu and Ir second electrode layer laminated on the first electrode layer, and a third Al, Ag or Rh electrode layer laminated on the second electrode layer, as recited in claim 2, a thin film electrode for forming an ohmic contact in light emitting diodes or laser diodes, comprising a first electrode layer laminated on a p-type gallium nitride layer and including at least one element selected from the group consisting of Au, Pt, Pd, Ni, Ru, Rh, Re, C, Cu and Ir; and a second electrode layer laminated on the first electrode and including a Ni--X solid solution, wherein the Ni-based (Ni-X) solid solution includes nickel (Ni) as a matrix metal and X includes at least one element selected from the group consisting of group II elements, group VI elements, Sc, Y, Ge, Sn, and Sb, as

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recited in claim 5, or such as a thin film electrode comprising a p-type gallium nitride layer, a Ni--X solid solution first electrode layer laminated on the first gallium nitride layer, and a transparent nitride second electrode layer laminated on the first electrode layer, as recited in claim 8. As is evidenced from the rejections of claims 1 and 10, it is the combination of specific layers, in specific order, having specific compositions, that distinguishes claims 2-4,5, 8, and 9 from the prior art of record. With regard to claim 5, Hisanaga et al. discloses a thin film electrode for forming an ohmic contact in light emitting diodes or laser diodes, comprising a first electrode layer 12 laminated on a p-type gallium nitride layer 14 and including Pt, at least one element selected from the group consisting of Au, Pt, Pd, Ni, Ru, Rh, Re, C, Cu and Ir; and a second electrode layer 13 including a Ni--X solid solution, wherein the Ni-based (Ni-X) solid solution includes nickel (Ni) as a matrix metal and X includes Mg, which is a group IIA element and thus at least one element selected from the group consisting of group II elements, group VI elements, Sc, Y, Ge, Sn, and Sb. Note figure 1 and the Abstract (Item number 57, on the first page) of Hisanaga et al. However, Hisanaga et al.'s second electrode layer 13 is not laminated on Hisanaga et al.'s first electrode layer 12, as required by claim 5.

7. Claims 6,7, and 15 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112 set forth in this Office action.

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***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**TLD**  
**06/05**